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Chemistry Age Related Reference Ranges and Critical Values

TEST	SEX	AGE	REFERENCE RANGE	CRITICAL VALUE	
Alanine Aminotransferase (ALT, SGPT)	Male	0 - 1 month 1 month - 1 year 1 - 3 years 3 - 9 years 9 - 18 years ≥18 years	10-25 U/L 10-35 U/L 10-30 U/L 10-25 U/L 10-30 U/L 10-35 U/L	None defined	
	Female	0 - 1 month 1 month - 1 year 1 - 3 years 3 - 9 years 9 - 18 years ≥18 years	10-25 U/L 10-35 U/L 10-25 U/L 10-25 U/L 10-20 U/L 10-35 U/L		
Albumin	M/F	0 - 6 days 6 days - 37 months 37 months - 7 years 7 - 20 years ≥20 years	2.6-3.6 g/dL 3.4-4.2 g/dL 3.5-5.2 g/dL 3.7-5.6 g/dL 3.5-5.0 g/dL	None defined	
Alkaline Phosphatase	Male	0 - 1 month 1 month - 1 year 1 - 3 years 3 - 6 years 6 - 9 years 9 - 12 years 12 - 15 years 15 - 18 years 18 - 59 years ≥59 years	75-316 U/L 82-383 U/L 104-345 U/L 93-309 U/L 86-315 U/L 42-362 U/L 74-390 U/L 52-171 U/L 53-128 U/L 56-119 U/L	None defined	
	Female	0 - 1 month 1 month - 1 year 1 - 3 years 3 - 6 years 6 - 9 years 9 - 12 years 12 - 15 years 15 - 18 years 18 - 59 years ≥ 59 years	48-406 U/L 124-341 U/L 108-317 U/L 96-297 U/L 69-325 U/L 51-332 U/L 50-162 U/L 47-119 U/L 42-98 U/L 53-141 U/L		
Ammonia	M/F	0 - 1 day 1 day - 2 weeks 2 weeks - 18 years ≥18 years	64-107 μmol/L 56-92 μmol/L 21-50 μmol/L 11-32 μmol/L	**Low** None defined	**High** None defined None defined >99 μmol/L >99 μmol/L
Amylase	M/F	0 - 1 month 1 - 6 months 6 months - 1 year 1 - 3 years 3 - 9 years 9 - 18 years ≥18 years	<10 U/L <10-17 U/L <10-44 U/L 10-79 U/L 16-91 U/L 19-76 U/L 10-200 U/L	None defined	

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TEST	SEX	AGE	REFERENCE RANGE	CRITICAL VALUE	
Aspartate Amino-Transferase (AST, SGOT)	M/F	0 - 6 days 6 days - 3 years 3 - 7 years 7 - 10 years	35-140 U/L 20-60 U/L 15-50 U/L 15-40 U/L	None defined	
	Male	10 - 12 years 12 - 16 years 16 - 20 years ≥20 years	10-60 U/L 10-45 U/L 10-45 U/L 14-50 U/L		
	Female	10 - 12 years 12 - 16 years 16 - 20 years ≥20 years	10-50 U/L 10-30 U/L 5-30 U/L 8-39 U/L		
Bilirubin, Direct	M/F	0 - 1 month ≥1 month	0.0-0.6 mg/dL 0.0-0.2 mg/dL	None defined	
Bilirubin, Total	M/F	0 - 1 day 1 - 2 days 2 - 5 days 5 days - 20 years ≥20 years	0.0-8.0 mg/dL 3.4-11.5 mg/dL 1.5-12.0 mg/dL 0.6-1.4 mg/dL 0.3-1.2 mg/dL	**Low** None defined	**High** >14.9 mg/dL
Blood Urea Nitrogen (BUN)	M/F	0 - 6 days 6 days - 20 years 20 - 60 years ≥60 years	4-12 mg/dL 5-18 mg/dL 6-20 mg/dL 8-23 mg/dL	**Low** None defined	**High** >104 mg/dL
Calcium, Ionized, Plasma and Whole Blood (Inpatient/ED/Surgery)	M/F	0 - 1 day 1 - 2 days ≥2 days	1.08-1.28 mmol/L 1.00-1.18 mmol/L 1.14-1.33 mmol/L	**Low** <0.76 mmol/L	**High** >1.49 mmol/L
Calcium, Ionized, Serum (Outreach)	M/F	0 - 1 day 1 - 2 days ≥2 days	1.08-1.28 mmol/L 1.00-1.18 mmol/L 1.14-1.40 mmol/L	**Low** <0.76 mmol/L	**High** >1.49 mmol/L
Calcium, Total	M/F	0 - 10 days 10 days - 2 years 2 - 12 years ≥12 years	7.6-10.4 mg/dL 9.0-11.0 mg/dL 8.8-10.8 mg/dL 8.6-10.3 mg/dL	**Low** <6.0 mg/dL	**High** >13.0 mg/dL
Carbon Dioxide, Total (CO_2, Bicarbonate)	M/F	0 - 1 week 1 week - 1 month 1 month - 6 months 6 months - 1 year 1 - 2 years 2 - 60 years ≥60 years	17-26 mmol/L 17-27 mmol/L 17-29 mmol/L 18-29 mmol/L 20-31 mmol/L 22-28 mmol/L 23-31 mmol/L	None defined	
Chloride	M/F	0 - 1 month 1 month - 90 years ≥90 years	98-113 mmol/L 98-107 mmol/L 98-111 mmol/L	**Low** <76 mg/dL	**High** >125 mg/dL
Cholesterol, Total	M/F	All Ages	108-199 mg/dL	Refer to NCEP ATP III Recommendations under the Lipid Profile	

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TEST	SEX	AGE	REFERENCE RANGE	CRITICAL VALUE	
Cholesterol, HDL	M/F	All Ages	40-125 mg/dL	Refer to NCEP ATP III Recommendations under the Lipid Profile	
Cholesterol/HDL Ratio	M/F	All Ages	0.0-5.0 mg/dL	None defined	
Cholesterol, LDL	M/F	All Ages	0-99 mg/dL	Refer to NCEP ATP III Recommendations under the Lipid Profile	
C-Reactive Protein (CRP)	M/F	All Ages	0-10 mg/L	None defined	
C-Reactive Protein, High Sensitivity (hsCRP)	M/F	All Ages	0-3 mg/L	None defined	
Creatine Kinase, Total (CK, CPK)	M/F	0 - 3 years	60-305 U/L	None defined	
		3 - 7 years	75-230 U/L		
		7 - 10 years	60-365 U/L		
	Male	10 - 12 years	55-215 U/L		
		12 - 14 years	60-330 U/L		
		14 - 16 years	60-335 U/L		
		16 - 20 years	55-370 U/L		
		≥20 years	35-232 U/L		
	Female	10 - 12 years	80-230 U/L		
		12 - 14 years	50-295 U/L		
		14 - 16 years	30-240 U/L		
		16 - 20 years	45-230 U/L		
		≥20 years	21-215 U/L		
Creatine Kinase-MB (CK-MB)	M/F	All ages	Negative: up to 6 ng/mL and less than 5% of total CK Positive: over 6 ng/mL and more than 4% of total CK		
Creatinine	M/F	0 - 4 days	0.30-1.00 mg/dL	**Low** None defined	**High** >7.3 mg/dL
		4 days - 2 months	0.20-0.40 mg/dL		
		2 months - 10 years	0.30-0.70 mg/dL		
		10 - 18 years	0.50-1.00 mg/dL		
	Male	≥18 years	0.70-1.30 mg/dL		
	Female	≥18 years	0.60-1.10 mg/dL		
Ferritin	Male	0 - 1 month	36-381 ng/mL	None defined	
		1 - 7 months	36-391 ng/mL		
		7 months - 1 year	36-100 ng/mL		
		1 - 6 years	36-84 ng/mL		
		6 - 19 years	36-311 ng/mL		
		≥19 years	22-322 ng/mL		
	Female	0 - 1 month	36-483 ng/mL		
		1 - 7 months	36-329 ng/mL		
		7 months - 1 year	36-70 ng/mL		
		1 - 6 years	36-84 ng/mL		
		6 - 19 years	36-92 ng/mL		
		≥19 years	10-291 ng/mL		

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Chemistry Age Related Reference Ranges and Critical Values

TEST	SEX	AGE	REFERENCE RANGE	CRITICAL VALUE	
Gamma Glutamyl Transferase (Gamma GT, GGT)	Male	0 - 6 months 6 months - 1 year 1 - 12 years 12 - 18 years ≥18 years	12-122 U/L 1-39 U/L 3-22 U/L 2-42 U/L 2-30 U/L	None defined	
	Female	0 - 6 months 6 months - 1 year 1 - 12 years 12 - 18 years ≥18 years	15-132 U/L 1-39 U/L 4-22 U/L 4-24 U/L 2-24 U/L		
Glucose	M/F	0 - 1 day 1 day - 1 month 1 month - 1 year 1 - 60 years 60 - 90 years ≥90 years	40-60 mg/dL 50-80 mg/dL 60-100 mg/dL 74-100 mg/dL 82-115 mg/dL 75-121 mg/dL	**Low** <31 mg/dL <31 mg/dL <41 mg/dL <41 mg/dL <41 mg/dL <41 mg/dL	**High** >299 mg/dL >299 mg/dL >499 mg/dL >499 mg/dL >499 mg/dL >499 mg/dL
Glucose, CSF	M/F	0 - 2 years ≥2 years	60-80 mg/dL 40-70 mg/dL	**Low** <40 mg/dL	**High** None defined
Iron	M/F	0 - 2 days 2 days - 2 years 2 - 6 years ≥6 years	100-250 μg/dL 40-100 μg/dL 35-140 μg/dL 35-140 μg/dL	**Low** None defined	**High** >299 μg/dL >299 μg/dL >299 μg/dL >499 μg/dL
Iron Binding Capacity, Total (TIBC)	M/F	All Ages	220-390 μg/dL	None defined	
Unsaturated Iron Binding Capacity	M/F	All Ages	130-300 μg/dL	None defined	
% Iron Saturation	M/F	All Ages	15-50%	None defined	
Lactate, CSF	M/F	All Ages	1.1-2.4 mmol/L	**Low** None defined	**High** >3.0 mmol/L
Lactate, Serum and Plasma	M/F	All Ages	Venous: 0.5-2.2 mmol/L Arterial: 0.5-1.6 mmol/L	**Low** None defined	**High** >2.9 mmol/L

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TEST	SEX	AGE	REFERENCE RANGE	CRITICAL VALUE	
Lactate Dehydrogenase (LDH)	Male	0 - 1 month	125-735 U/L	None defined	
		1 month - 1 year	170-450 U/L		
		1 - 6 years	155-345 U/L		
		6 - 9 years	145-300 U/L		
		9 - 12 years	120-325 U/L		
		12 - 15 years	120-290 U/L		
		15 - 18 years	105-235 U/L		
		18 - 90 years	100-190 U/L		
		≥90 years	99-284 U/L		
	Female	0 - 1 month	145-765 U/L		
		1 month - 1 year	190-240 U/L		
		1 - 3 years	165-395 U/L		
		3 - 6 years	135-345 U/L		
		6 - 9 years	140-280 U/L		
		9 - 12 years	120-260 U/L		
		12 - 15 years	100-275 U/L		
		15 - 18 years	105-230 U/L		
		18 - 90 years	100-190 U/L		
		≥90 years	99-284 U/L		
Lipase	M/F	All Ages	7-59 U/L	None defined	
Magnesium	M/F	0 - 6 days	1.6-2.7 mg/dL	**Low**	**High**
		6 days - 1 month	1.8-2.4 mg/dL	<1.1 mg/dL	>4.8 mg/dL
		1 month - 2 years	1.6-2.6 mg/dL		
		2 - 7 years	1.5-2.4 mg/dL		
		7 - 10 years	1.6-2.3 mg/dL		
		10 - 14 years	1.6-2.2 mg/dL		
		14 - 20 years	1.5-2.3 mg/dL		
		≥20 years	1.7-2.2 mg/dL		
Magnesium, OB	Female	All Ages	4.0-7.9 ng/dL	**Low** <1.1 mg/dL	**High** >7.9 mg/dL
Phosphorus				**Low**	**High**
	Male	0 - 1 month	3.9-6.9 mg/dL	<1.2 mg/dL	>8.8 mg/dL
		1 month - 1 year	3.5-6.6 mg/dL		
		1 - 4 years	3.1-6.0 mg/dL		
		4 - 7 years	3.3-5.6 mg/dL		
		7 - 10 years	3.0-5.4 mg/dL		
		10 - 13 years	3.2-5.7 mg/dL		
		13 - 16 years	2.9-5.1 mg/dL		
		16 - 18 years	2.7-4.9 mg/dL		
		18 - 60 years	2.7-4.5 mg/dL		
		≥60 years	2.3-3.7 mg/dL		
	Female	0 - 1 month	4.3-7.7 mg/dL		
		1 month - 1 year	3.7-6.5 mg/dL		
		1 - 4 years	3.4-6.0 mg/dL		
		4 - 7 hears	3.2-5.5 mg/dL		
		7 - 10 years	3.1-5.5 mg/dL		
		10 - 13 years	3.3-5.3 mg/dL		
		13 - 16 years	2.8-4.8 mg/dL		
		16 - 18 years	2.5-4.8 mg/dL		
		18 - 60 years	2.7-4.5 mg/dL		
		≥60 years	2.8-4.1 mg/dL		

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Chemistry Age Related Reference Ranges and Critical Values

TEST	SEX	AGE	REFERENCE RANGE	CRITICAL VALUE	
				Low	**High**
Potassium	M/F	0 - 1 year >1 year	3.7-5.9 mmol/L 3.6-5.0 mmol/L	<2.9 mmol/L <2.9 mmol/L	>7.4 mmol/L >6.1 mmol/L
Protein, CSF	M/F	All Ages	15-45 mg/dL	**Low** None defined	**High** >188 mg/dL
Protein, Total	M/F	0 - 1 week 1 week - 7 months 7 months - 1 year 1 - 3 years 3 - 18 years 18 - 60 years ≥60 years	3.6-6.0 g/dL 4.6-7.0 g/dL 5.1-7.3 g/dL 5.6-7.5 g/dL 6.0-8.0 g/dL 6.0-8.3 g/dL 5.8-8.1 g/dL	None defined	
				Low	**High**
Sodium	M/F	0 - 1 year 1 - 12 years ≥12 years	133-146 mmol/L 138-145 mmol/L 136-145 mmol/L	<126 mmol/L <121 mmol/L <121 mmol/L	>149 mmol/L >159 mmol/L >159 mmol/L
Triglycericde	M/F	All Ages	26-149 mg/dL	Refer to NCEP ATP III Recommendations under the Lipid Profile	
Uric Acid	M/F	0 - 6 days 6 days - 3 years 3 - 7 years 7 - 10 years	1.9-7.9 mg/dL 1.8-5.0 mg/dL 2.2-4.7 mg/dL 2.0-5.0 mg/dL	None defined	
	Male	10 - 12 years 12 - 14 years 14 - 16 years 16 - 20 years ≥20 years	2.3-5.4 mg/dL 2.7-6.7 mg/dL 2.4-7.8 mg/dL 4.0-8.6 mg/dL 3.5-7.2 mg/dL		
	Female	10 - 12 years 12 - 16 years 16 - 20 years ≥20 years	3.0-4.7 mg/dL 3.0-5.8 mg/dL 3.0-5.9 mg/dL 2.6-6.0 mg/dL		

Reference ranges are subject to update. Refer to the individual test listed on the Legacy web site or the patient chart for reference ranges at time of testing.